

1030-05-281

Tao Jiang* (jiangt@muohio.edu), Department of Mathematics and Statistics, Miami University, Oxford, OH 45056. *Properly colored cycles and rainbow cycles in edge-colored graphs*. Preliminary report.

The general problem of interest here is: what kind of color patterns are forced to occur in every edge-coloring of a given host graph satisfying certain constraints? This problem is motivated by the canonical Ramsey theorem and the Turan problem. As in the Turan problem, good general results often do not apply to cycles, leaving the case for cycles particularly intriguing.

We survey some recent results and problems on cycles. In particular, we prove the following conjecture of Axenovich, Jiang, and Tuza: for every k there is a constant λ_k depending only on k such that for every sufficiently large n if the edges of K_n are colored such that at least λ_k different colors appear at each vertex then we can always find a properly colored cycle of length k in this coloring. (Received August 06, 2007)